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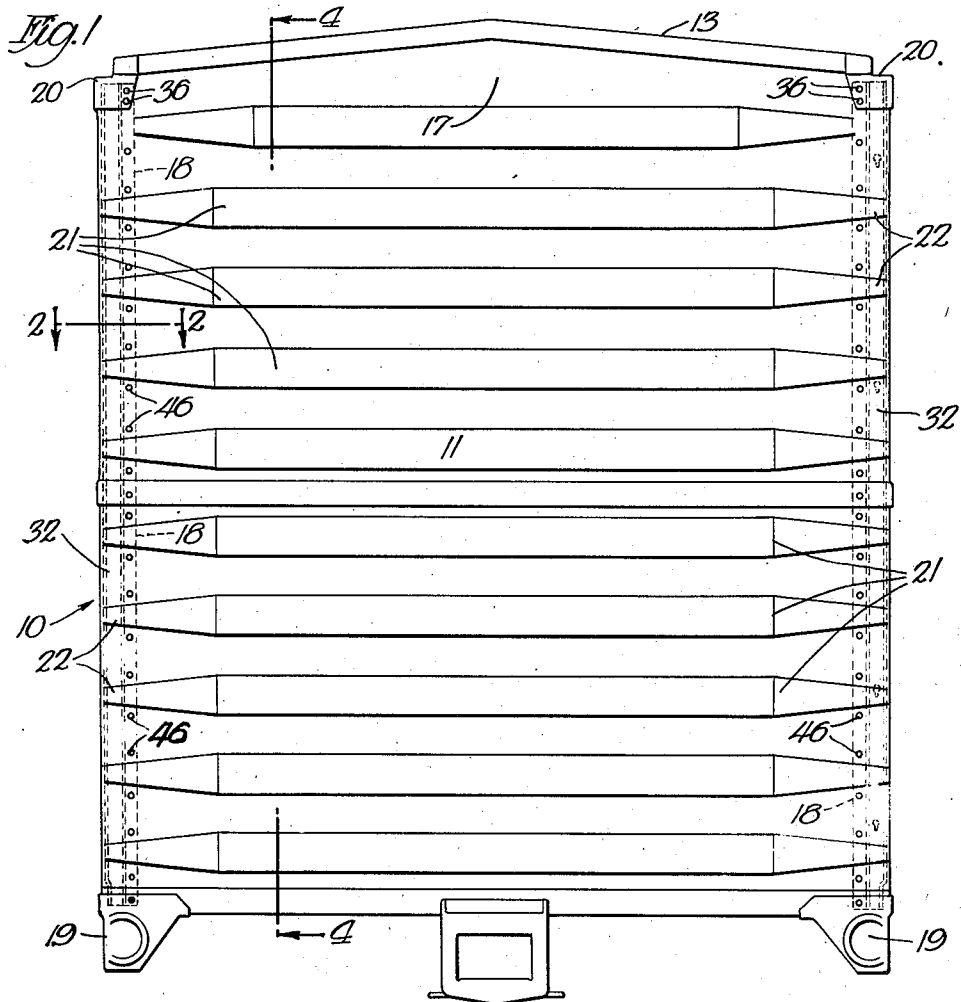
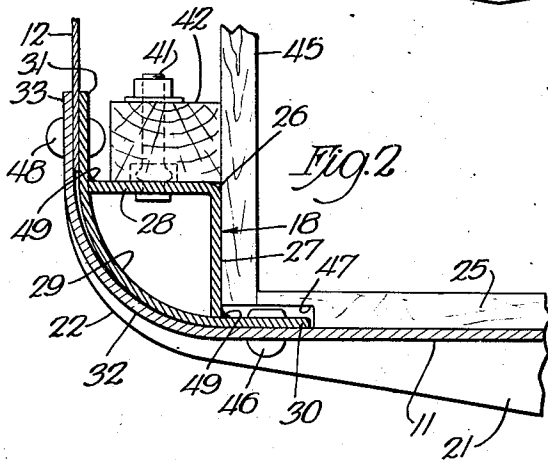
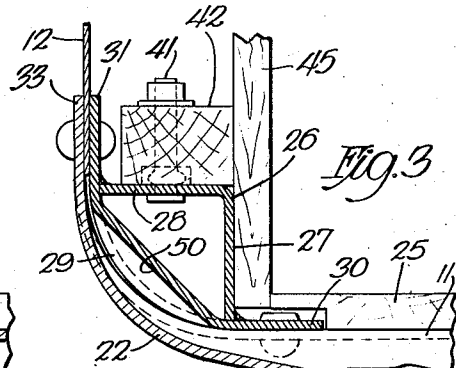
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VEHICLE FRAMING POST CONSTRUCTION

Filed June 27, 1942

2 Sheets-Sheet 1



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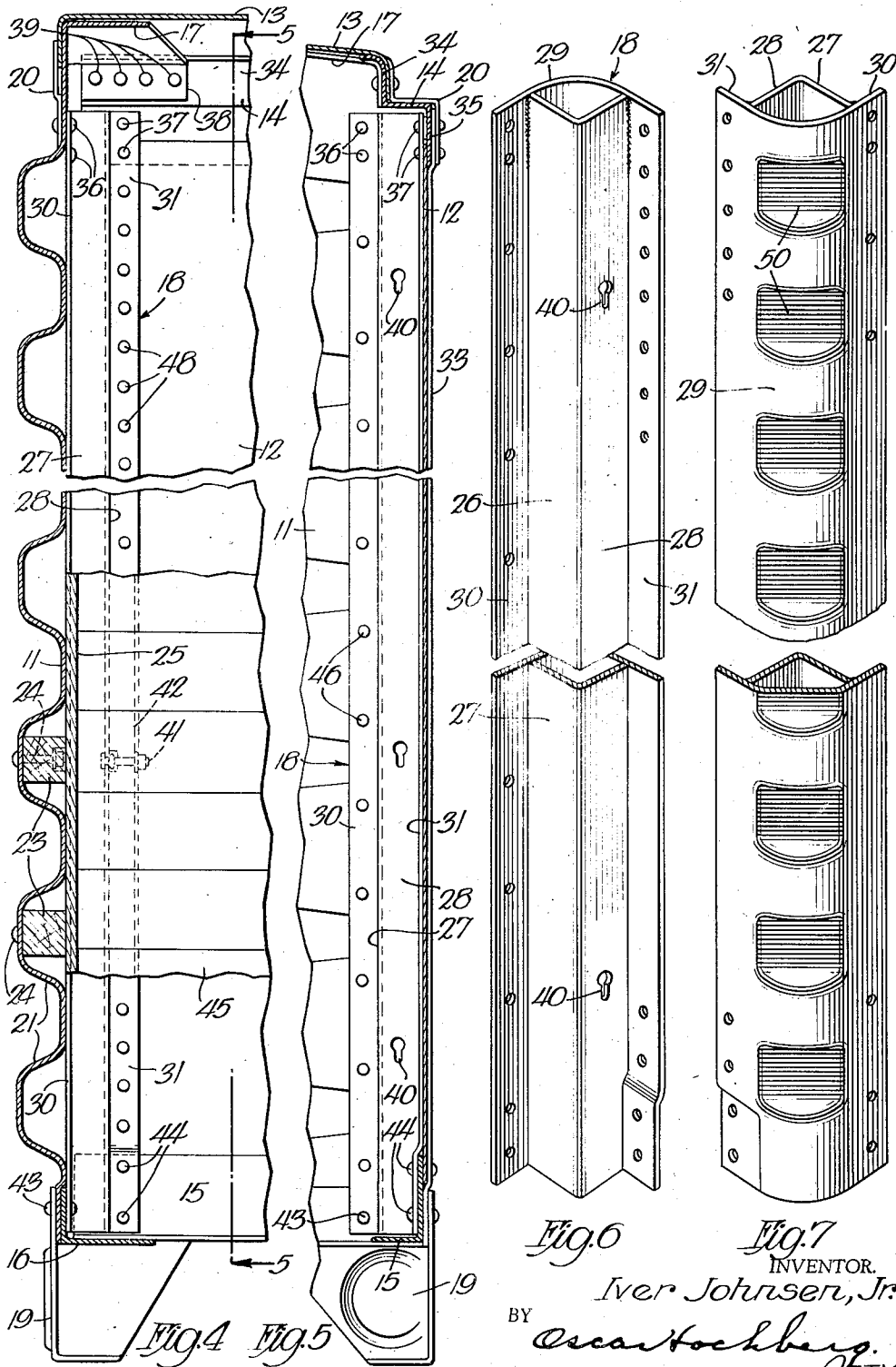
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UNITED STATES PATENT OFFICE

2,379,640

VEHICLE FRAMING POST CONSTRUCTION

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5 Claims. (Cl. 105—410)

This invention relates to railway cars and more particularly railway freight cars with especial reference to box cars and the like and the primary purpose of the invention is the provision of a corner post construction affording greatly increased strength in the end wall structure of cars of this type. The invention, however, contemplates use of the construction as other than a corner post, such for instance, as a door post and further contemplates use of the post on other than box cars. The invention also comprehends use of the construction as a general framing member.

The invention has for its principal object to provide a corner post adapted to be constructed in whole or box section form as a sub-assembly which may be handled as a unit during the operation of fabricating the post into the framing structure in association with other framing members at the assembly locations.

An important object of the invention lies in the provision of a box section corner post consisting of an outer arcuate member having a complementary inner angular member secured thereto in a manner to afford the box section and in which the outer member extends beyond the opposite attaching points of the inner member to provide flanges for the attachment of the car end and sidewall sheathing.

The invention further contemplates a railway car corner post comprised of an inner angle member and a complementary outer member of arcuate or angular formation with the inner member secured edgewise to the outer member to provide a box section and with the outer member extending beyond such edges thereby to afford attaching flanges.

Another object of the invention includes a corner post constructed of complementary inner and outer members each having flanges extending at right angles and secured together in opposing relation to provide a box section column with the flanges of one member extending beyond the respective flanges of the other member.

The foregoing and other objects of the invention are attained by the arrangement illustrated in the accompanying drawings, in which

Fig. 1 is a general elevational view of a railway car end wall construction equipped with corner posts in accordance with this invention;

Fig. 2 is a horizontal sectional view through a corner post taken on the line 2—2 of Fig. 1 showing the post as assembled with the car side and end walls;

Fig. 3 is a view similar to Fig. 2 but illustrating

a modified form of corner post construction in that the outer member is provided with corrugations at intervals corresponding to the corrugations of the car end with which they are associated in opposed relation;

Fig. 4 is a vertical sectional view through the end wall taken on the line 4—4 of Fig. 1 showing the corner post secured in place;

Fig. 5 is a vertical sectional view through the side wall of the car taken on the line 5—5 of Fig. 4 illustrating the corner post in position and secured to the side plate, side sill, end sill and end wall;

Fig. 6 is a detail perspective view of the corner post illustrated in Fig. 2; and

Fig. 7 is a detail perspective view of the corner post illustrated in Fig. 3 and showing the corrugations in the outer member.

The invention is illustrated solely as a corner post in connection with railway freight cars, but is susceptible of use as other than a corner post and may be utilized on other than freight cars. The post of this invention may be located at the corner position or at the door position on freight cars or on passenger train cars including baggage or express cars.

In the drawings, 10 represents a railway car having an end wall 11, side walls 12, and a roof 13, all secured in the usual manner to framing members comprising side plates 14, side sills 15 and end sill 16—the end plate 17 being formed integrally with the end wall 11. Corner posts 18 are secured in the framing assembly and provide columns extending between the side and end sills and the roof framing and to which the end wall and side sheathing are adapted to be secured. Push pole pocket members 19 are secured through the end wall and side sheathing at the connection therebetween and the end and side sills and corner posts, while corner cap members 20 are adapted to close the joint at the roof line between the side and end plates and the roof sheet and corner posts. The end wall 11 is provided with corrugations 21 which, as shown in Figs. 1 and 2, may extend around the corners as at 22 for distribution and transmission of stresses in the end wall into the side sheathing or which may be terminated at the inside flange of the corner post, as desired. Nailing strips 23 are secured in the corrugations 21 by means of bolts 24 for the attachment of inside lining 25.

The corner posts 18 are continuous members adapted to be constructed as sub-assemblies and fabricated into the framing assembly as complete structures susceptible of being handled as units

in themselves during the erection process. The posts each comprise an inner member 26 having flanges 27 and 28 disposed at right angles to each other and an outer member 29 having flanges 30 and 31 at right angles to each other. The inner and outer members complement each other and when secured together in opposed relation provide a hollow box section with the flanges of the member 26 secured edgewise to the inner surface of the member 29 and the flanges of the latter member extending beyond the attachment thereto of the flanges of the first member whereby to afford a hollow column having flanges projecting at right angles therefrom for the attachment of end wall and side sheathing respectively. By the securing of the complementary inner and outer members together by means of welds 49, a unitary corner post is provided which as a flanged column is adapted to transmit stresses between the end wall and side sheathing with the greatest resistance against the torsional forces thus produced and which acts as a strut between the underframe structure of the car, including the end and side sills, and the roof framing comprising the end and side plates and roof sheets including car-lines (not shown). The outer member 29 of the corner post is preferably curved and extends on an arc continuous between the points of attachment of flanges 27 and 28 of the inner angular member 26, wherefore the corner post might be said to be comprised of an angle member secured in opposed relation to a complementary arched member forming a hollow box section, which preferred form of the invention, it will be noted, serves a definite function as hereinafter will appear although it is wholly possible within the concept of the invention to utilize a plurality of complementary angle members in opposed relation to provide a hollow box section flanged column corner post as contemplated herein.

It will be seen that the car end 11 is provided at opposite sides with rounded corner 32 having rearwardly extending flanges 33 for connection with the side sheathing 12. The corner posts 18, as shown, are each of them adapted to conform to the curvature of the end at the corners with which they are adapted to cooperate and act as reinforcements thereto. The arrangement of the corner post with respect to the end wall is such that the outer member 29 is disposed in juxtaposition to the curved portion 32 of the end with the flange 30 extending parallel to the end wall and flange 31 arranged parallel with the rearwardly extending flange 33 on the end and to the side sheathing 12. The flanges 30 and 31, extending beyond the inner member 26 to provide the flanged column, comprise means for securing the corner post in the car framing. Rivets 36 and 37 secure the post to the end plate 17 and side plate 14 respectively and these rivets also take the corner cap 20. The side sheathing 12 is entered between the flange 31 on the corner post and depending flange 35 of the side plate with the rearwardly extending flange 33 on the end crimped to lie against the outer surface of the flange 35 and the corner cap 20 closes the joint between all of the members. The end plate 17 at each side is provided with depending flange 38, as best shown in Fig. 4, which is disposed adjacent the inner side of and secured to the upstanding flange 34 of the side plate by means of rivets 39.

At the underframe position the flanges 30 and 31 are secured to the end sill and side sill by means of rivets 43 and 44 respectively. The

rivets 43 attaching the post to the end sill also secure the bottom edge of the end wall 11 which is crimped to overlie the outer face of the end sill and the uppermost of the rivets 44 take the flange 31 of the corner post, the upstanding flange of side sill angle 15, the lower extremity of side sheathing 12 and the rearwardly extending flange 33 with the flange 31 crimped to pass inwardly of the side sill while the sheathing 12 is disposed outwardly thereof and the flange 33 outside of the sheathing and crimped to engage the side sill therebeneath. The lowermost rivets 44 take the flange 31, side sill 15, the crimped portion of flange 33 and the push pole member 19, in that order. The corner post flange 30 between the upper and lower connections to the roof framing and underframe is rigidly connected with the end wall 11 by means of rivets 46 secured at points between the various corrugations 21. The rivets 46, as best shown in Fig. 2, are provided on the inner side with flattened heads to clear the inside lining 25, which is constructed at this point with a rabbet 47 for that purpose.

The flange 31 of the corner post between the connections to the underframe and roof framing affords means for attachment of the side sheathing 12 and also the rearwardly extending flange 33 of the car end with the side sheathing disposed between the flanges 31 and 33 and the whole secured by rivets 43. The inner member 26 might be said to define the flanges 30 and 31 of the outer member in that the former determines the limits of the hollow box section and the flanges extend outwardly therefrom. The hollow box section column is of such size as to provide a post of the necessary strength and is so proportioned as to space and support the inside lining in conformity with the remaining posts of the side frame (not shown). The side lining 45 is disposed flush against the surface of the flange 27 of inner member 18 and is secured to nailing strip 42 which is attached to the corner post by means of bolts 41. The end of the side lining adjacent the end wall is disposed between the surface 27 and the abutting end lining 25 as best shown in Fig. 2. The bolts 41 are anchored to the corner post by means of keyhole slots 40 which are disposed at spaced intervals in the flange 23 of the inner member and into which the bolts are inserted as best illustrated in Figs. 2 and 4. The hollow box section construction therefore is of the same dimension as the car side and framing and with the flanges 30 and 31 extending therefrom, ideal means for attaching the corner post in the car framing is provided. With the respective flanges of the corner post thus secured to the car end by means of rivets 46 and to the side flange 33 of the end and the side sheathing 12 by means of rivets 43, it will be seen that the columnar post rigidly connected top and bottom to the roof framing and underframe provides an exceedingly strong reinforcement for the car end adapted to offer the greatest resistance to impact and to the various forces to which the end is subjected. By the use of a unitary corner post, all loads imposed on the car end are transmitted to the corner post as a whole and individual part of the car framing and thence distributed to the car side and framing generally. The integrated box section characteristics of the corner post and the manner of securing the post in the car framing by means of the right angular flanges provides a member having the greatest strength for the conditions encountered at this location and stiffens the entire framing structure

at the ends. The rigidly connected flanges at right angles to each other on the corner post afford convenient means for secure attachment of the post in the corner formed by the side and end walls and the hollow box section construction effected by the association of the inner member 26 with the outer member 29 lends the utmost rigidity to the post in resisting the torsional stresses created by the transmission of forces between the end and sides.

It will be readily understood that many modifications in the construction of the corner post may be made without departing from the invention as disclosed herein. The post may take the form of opposed complemental angular members or any combination of opposed complemental angular and arcuate members or diagonal members opposed to either complemental arcuate or angular members. One form of slight modification of the corner post is illustrated in Figs. 3 and 7 in which the post is provided with corrugations at intervals corresponding to the corrugations in the car end. In Fig. 3, the horizontal section is taken directly through one of the corrugations 22 at the corner of the end. From this figure it will be seen that a rib 50 is pressed in the outer arcuate member 29 transversely of the post and extending continuously in a diagonal direction between the flanges 27 and 28 of the inner member. The rib 50 thus disposed in opposed relation to the corner corrugation 22 of the car end and combined therewith provides a hollow tubular horizontal stiffening beam extending around the corner of the end in continuation of the various corrugations 21 of the end. The ribs 50, as will be observed from this figure, are indented inwardly of the surface of the outer member to the full depth available between the attachment points of the outer member to the inner and are disposed at vertically spaced intervals as shown in Fig. 7 which correspond to the corner corrugations 22.

While the invention has been stressed herein for use as a vertical post member it is conceivable that the construction may be utilized as a longitudinal framing member such for instance as a side plate or a side sill and sometimes as an end plate or sill disposed transversely of the car. It will readily be understood that a framing member constructed in accordance with the present disclosure is adaptable to use in any corner structure where it is desired that the corner member have attaching flanges at right angles and the increased strength of a box section, whether it be as a vertical member or disposed horizontally and either longitudinally or transversely.

The foregoing is for the purpose of disclosure only and is not to be construed as limiting the invention in any way other than defined by the claims hereto appended.

What I claim is:

1. In a railway car framing structure including an end sill member, a side sill member, an end plate member and a side plate member, a unitary corner post structurally connecting all of said framing members comprising a sub-assembly including an inner member and an outer member, said inner member comprising an angle member the legs of which are disposed at a right angle to each other and said inner member being arranged in opposed relation to the outer member, said outer member being formed on an arc and secured to the edges of the respective legs of the inner member to provide an integrated hollow box section structure having flanges ex-

tending from the outer member beyond the edges of the legs of the inner member in directions at right angles to each other to provide wall attaching means, side wall sheathing secured to the outer surface of one of said flanges, and a car end wall separate from each of said inner and outer members secured to the other of said flanges and extending around said corner post in overlapping relationship to said sheathing and secured to the outer surface of said sheathing and to said first named flange.

2. A railway car corner post comprising a unitary prefabricated structure including an inner member and an outer member, said inner member comprising an angle member the legs of which are disposed at a right angle to each other and said inner member being arranged in opposed relation to the outer member, said outer member being formed on an arc and secured to the edges of the respective legs of the inner member to provide an integrated hollow box section structure having flanges extending from the outer member beyond the edges of the legs of the inner member in directions at right angles to each other to provide attaching means for side wall sheathing adapted to be secured to the outer surface of one of said flanges and for a car end wall adapted to be secured to the other of said flanges and to be extended around the corner post in overlapping relationship to said sheathing and to be secured to the outer surface of said sheathing and to said first named flange.

3. In a railway car framing structure including an end sill member, a side sill member, an end plate member and a side plate member, a unitary corner post structurally connecting all of said framing members comprising a sub-assembly including an inner member and an outer member, said inner member comprising an angle member the legs of which are disposed at a right angle to each other and said inner member being arranged in opposed relation to the outer member, said outer member being formed on an arc and secured to the edges of the respective legs of the inner member to provide an integrated hollow box section structure having flanges extending from the outer member beyond the edges of the legs of the inner member in directions at right angles to each other to provide wall attaching means, strengthening ribs formed horizontally in the outer member between the edges of the legs of the inner member, side wall sheathing secured to the outer surface of one of said flanges, and a car end wall separate from each of said inner and outer members secured to the other of said flanges and extending around said corner post in overlapping relationship to said sheathing and secured to the outer surface of said sheathing and to said first named flange.

4. A railway car corner post comprising a unitary prefabricated structure including an inner member and an outer member, said inner member comprising an angle member the legs of which are disposed at a right angle to each other and said inner member being arranged in opposed relation to the outer member, said outer member being formed on an arc and secured to the edges of the respective legs of the inner member to provide an integrated hollow box section structure having flanges extending from the outer member beyond the edges of the legs of the inner member in directions at right angles to each other to provide attaching means for side wall sheathing adapted to be secured to the outer surface of one of said flanges and for a car end

wall adapted to be secured to the other of said flanges and to be extended around the corner post in overlapping relationship to said sheathing and to be secured to the outer surface of said sheathing and to said first named flange, and strengthening ribs formed horizontally in the outer member between the edges of the legs of the inner member.

5. In a railway car framing structure including an end sill member, a side sill member, an end plate member and a side plate member, a unitary corner post structurally connecting all of said framing members comprising a sub-assembly including an inner member and an outer member, said inner member comprising an angle member the legs of which are disposed at a right angle to each other and said inner member being arranged in opposed relation to the outer member, said outer member being formed on an arc and secured to the edges of the respective legs of the

inner member to provide an integrated hollow box section structure having flanges extending from the outer member beyond the edges of the legs of the inner member in directions at right angles to each other to provide wall attaching means, strengthening ribs formed horizontally in the outer member between the edges of the legs of the inner member, side wall sheathing secured to the outer surface of one of said flanges, and a car end wall separate from each of said inner and outer members secured to the other of said flanges and extending around said corner post in overlapping relationship to said sheathing and secured to the outer surface of said sheathing and to said first named flange, said end wall having formed therein horizontal corrugations corresponding to and aligned with the respective strengthening ribs of the corner post.

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